SuperPower Sets New World Record for Second Generation (2G) High-Temperature Superconducting Wire

SuperPower, Inc. a Schenectady New York subsidiary of Intermagnetics, recently surpassed its previous record for long-length 2G wire by 100 meters, producing a 427 meter piece. The minimum critical current of this piece is 81,577 Ampere-meters, a world record. As recently as 2002 no manufacturer had produced more than a 1 meter segment of this wire.

With support from the Office of Electricity Delivery and Energy Reliability (OE), SuperPower, Inc. is now manufacturing its record breaking 2G wire on a pilot scale. The goal is to demonstrate high-throughput processing of high quality conductor in long lengths and then use this process to manufacture enough material for a superconducting cable demonstration project in Albany, New York.

OE's Research and Development Division is leading a national effort to accelerate the development of advanced electric systems which use 2G wire, as well as other high temperature superconducting products, to maintain U.S. leadership in this promising new technology and help modernize America's electric grid.

OE's overall goals for high temperature superconductivity (HTS) technologies are to: (1) develop wire with 100 times the current carrying capacity of conventional copper wires at comparable unit costs, and (2) develop power equipment with one-half of the energy losses, and one-half the size, of conventional units.

Potential applications for HTS technologies include:

- Power Cables that are more efficient, have a higher power transfer capability, and give utilities the ability to increase power in urban areas by using existing cable ducts, foregoing the requirement to dig up congested urban areas to lay new ducts.
- Transformers that are more efficient, lighter, more compact, have lower life-cycle costs, and contain no environmentally-harmful materials.
- Fault Current Limiters which provide the ability to limit damaging high-current transients (due to lightning strikes, fallen tree limbs, etc.), resulting in increased operational flexibility and enhanced safety, reliability and power quality. There is no corresponding conventional device today.
- Motors and generators with increased efficiency, smaller footprints and lower weight when compared to conventional motors.